Impacts of Special Duty Assignments

September 2019

Directorate of Analytics and Performance Optimization

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Background

- ➢ Special Duty Assignments (SDA) are a specific set of assignments outside of a Marine's primary Military Occupational Specialty (MOS) and operational experience that demand high levels of personal responsibility.

- ➢ Primary categories of SDAs fall under the following billet/secondary MOS fields*:
  - o Drill Instructor (0911)
  - o Recruiter (8411)
  - o Marine Security Guard (8156)

- ➢ A Marine who has successfully served a tour as a Drill Instructor (DI), Recruiter, or Marine Security Guard (MSG) is regarded as highly qualified for promotion. In addition, opportunities for meritorious promotion are authorized for Marines while on SDA.

*Although guidance has changed over time regarding which MOS fields are considered a SDA, our analysis focuses on Drill Instructors, Recruiters (Non-career), and Marine Security Guard as a subset of these.

Purpose & Scope

- **Motivation:** Marines on SDAs have unique positions of authority and/or responsibility. Due to increased responsibilities and duties outside of one's normal occupational field, SDA tours are often viewed as a Marine's most stressful non-combat tour.

- **Purpose:** This project seeks to understand the adverse health-related outcomes of Marines who serve on SDAs. These outcomes include divorce, unhealthy habits, and mental health diagnoses, among others. Additionally, the analysis investigates the effects of a SDA on a Marine's career.

- **Scope:** This project compares enlisted Active Duty Marines who served on SDAs from October 2008 to October 2018 to Marines who did not serve on SDAs during the same timeframe in order to examine trends of interest.

Methodology: Sampling

➢ Analyzed 756,484 unique Marines who accumulated more than 4 years time in service from October 2008 to October 2018.

➢ This population of Marines was further subdivided into two separate categories:

- ◦ SDA:
  - Drill Instructors must have the DI Billet MOS (0911) and a Monitored Command Code (MCC) for Parris Island, SC or San Diego, CA.
  - Recruiters must have the Recruiter Billet MOS (8411) and a MCC for one of the recruiting stations.
  - Marine Security Guards must have the MSG Billet MOS (8156) and a MCC for one of the MSG regions.
- ◦ Non-SDA:
  - Marines who did not have the Billet MOS and MCC of a SDA.
  - Additionally, the control population must have been an E3 or above and in service between FY08 to FY18.

Category	Number of Marines (FY08 – FY18)
Drill Instructor (0911)	3,478
Recruiter (8411)	7,846
Marine Security Guard (8156)	5,624
Non-SDA	739,536

Methodology: Sampling (continued)

> Tracking individual Marines is a challenge given the Corps' lack of data governance. This analysis establishes a strict set of parameters to ensure we were as confident as we can be in categorizing Marines.

Example: Selecting Recruiters via MOS & MCC

- Initial Analysis:
  - Selected records from TFDW where recruiters have the Recruiter Billet MOS (8411) and have a MCC for one of the recruiter stations
  - Only included recruiters whose first and last month of a SDA was within FY08 – FY18
  - Identified 7,847 Recruiters
- Alternative Query 1:
  - Selected records from TFDW where recruiters have the Recruiter Billet MOS (8411) or Career Recruiter Billet MOS (8412) and have a MCC for one of the recruiting stations
  - Only included recruiters whose first and last month of a SDA was within FY08 – FY18
  - Identified 8,443 Recruiters
- Alternative Query 2
  - Ignoring MCC yields an extra ~2,000 recruiters
  - Identified 10,037 Recruiters
- Alternative Query 3:
  - Selected records from TFDW where a Marine has a MCC at one of the recruiter stations
  - Identified 14,076 Marines

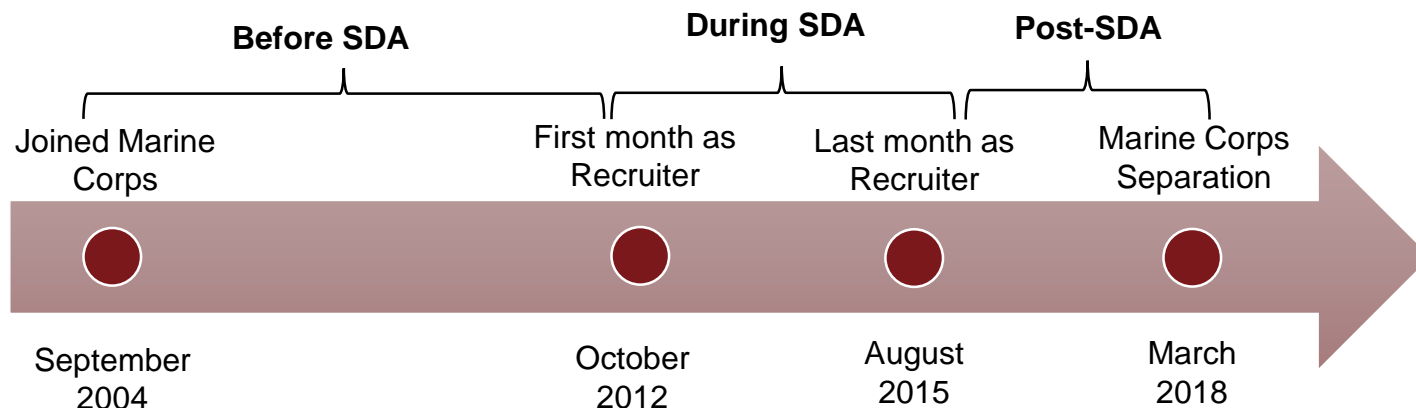| Category	Number of Marines (FY08 – FY18)
Initial Analysis: Recruiter MOS (8411) + MCC	7,846
Alternative Query 1: Recruiter MOS (8411 or 8412) + MCC	8,443
Alternative Query 2: Recruiter MOS (8411 or 8412)	10,037
Alternative Query 3: Recruiter MCC	14,076

Methodology: Time Frame

- ➢ Before/During/Post SDA:
  - ○ **Before SDA:** refers to the period of a Marine's career before starting a SDA; this period ends the first month a SDA MOS is awarded to the Marine and the Marine is assigned to an appropriate MCC.
  - ○ **During SDA:** refers to the period of a Marine's career in which he/she is actively serving in a SDA; the Marine has both a SDA MOS and is assigned to an appropriate MCC.
  - ○ **Post-SDA:** refers to the rest of a Marine's career after he/she has finished serving in a SDA; the Marine's Billet MOS changes to a non-SDA MOS and the Marine is no longer assigned to a SDA MCC.

Example: Recruiter Time Frame

Before SDA   **During SDA**   **Post-SDA**

Joined Marine Corps	First month as Recruiter	Last month as Recruiter	Marine Corps Separation
September 2004	October 2012	August 2015	March 2018

Methodology: Diagnoses

➢ This project leverages Electronic Health Records (EHRs) from the Defense Health Agency (DHA) and includes TRICARE Encounter Data-Institutional (TEDI) and Non-institutional (TEDNI).

➢ We identify medical diagnoses using versions 9 and 10 of the International Statistical Classification of Diseases (ICD- 9 and ICD-10) codes captured in:
   o Comprehensive Ambulatory/Professional Encounter Record (CAPER)
   o Standard Ambulatory Data Records (SADR)
   o Standard Inpatient Data Record (SIDR)
   o Theater Medical Data Store (TMDS)

➢ ICD-9 and ICD-10 codes are grouped into 20+ categories, of which we focus on the following:

Diagnosis Group	Number of Diagnoses Considered	Number of Person-Events
Addiction	531	88,499
Mental Health	790	421,479
Suicide	51	30,677

➢ We combine EHR data with additional demographic information such as grade, primary MOS, and marital status from various Marine Corps Manpower databases, primarily the Total Force Data Warehouse (TFDW).

➢ Utilizing the combined dataset, we conduct a series of statistical significance tests to identify differences between Marines who serve in any of the three SDA communities and Marines who were never on a SDA.

Constraints, Limitations, Assumptions

➤ **Constraints**
  - Study only leverages enterprise data currently available.

➤ **Limitations**
  - Deployment history relative to SDA is not captured.
  - Neither the number of dependents nor factors for service member to service member marriages is considered in the analysis of divorce.
  - Marines selected for SDAs might have pre-existing behaviors that distinguish them from the non-SDA population.
  - Many metrics of successful SDA completion are immeasurable.
  - If/when a Marine transitions to reservist status is not modeled.
  - This study does not account for the age of a Marine at the start of a SDA or for how long a Marine serves in a SDA.

➤ **Assumptions**
  - If a Marine had more than four years time in service, we assume him/her to be on a second enlistment.
  - As an E3 or above with more than four years time in service, we assume a Marine is SDA eligible.
  - Awarding of the appropriate MOS and assignment at an appropriate MCC denotes a SDA.
  - Marines did not have broken service while on a SDA.
  - Geography did not play a role in manifestation of stress while on SDA. (We investigated this concern, but it did not show any significance based on the data available.)
  - Workload (e.g., number of recruits assigned, class size volume, etc.) did not play a role in manifestation of stress while on a SDA. (We also investigated this concern, but it did not show any significance based on the data available.)

- **Constraint:** A restriction imposed by the *study sponsor* that limits the study team's options in conducting the study.
- **Limitation:** An inability of the study team to fully meet the study objectives or fully investigate the study issues.
- **Assumption:** A statement related to the study that is taken as true in the absence of facts, often to accommodate a limitation.

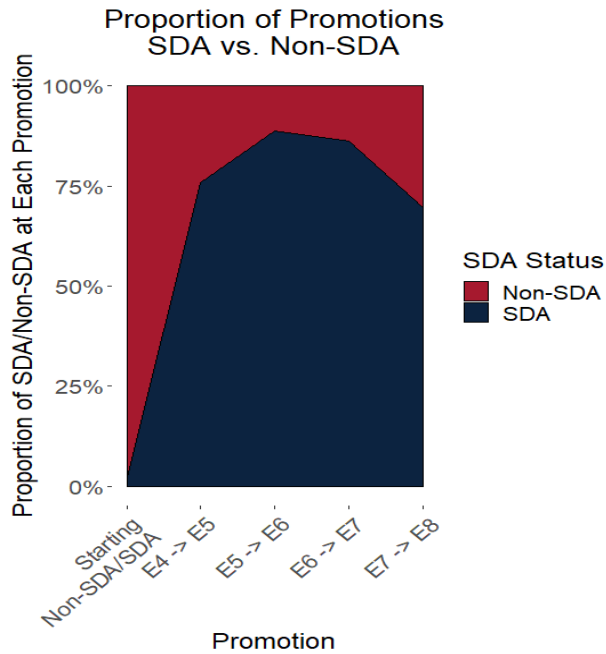# Positive Outcomes & SDAs: Time in Service

On average, Marines who serve as DIs and Recruiters have longer careers compared to their peers who never serve on a SDA or serve on MSG Duty.

- Marines who serve as DIs and Recruiters have similar average career lengths of approximately 150 months (~12.5 years), compared to about 110 months (~9.2 years) for Marines who never serve on a SDA.

- Marines who serve as MSGs tend to have shorter average career lengths (~ 8.3 years) compared to both their peers on other SDAs and those who never serve on a SDA.

Average Time in Service (Months) SDAs vs. Non-SDAs

Group
- DI
- Recruiter
- MSG
- Non-SDAs
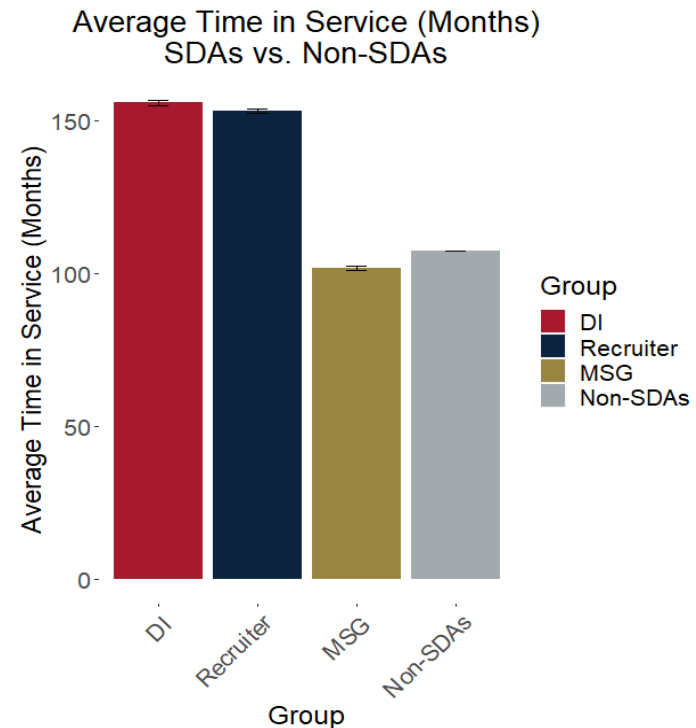
Positive Outcomes & SDAs: Proportion of Promotions

## Proportion of Promotions SDA vs. Non-SDA

- At the aggregate level, SDA Marines comprise only 3% of the total analysis population; however, they make up 75% of the E4 to E5 promotion interval.

- This difference in rank attainment remains for the rest of their careers.

- Marines who serve on SDAs have a higher chance of promotion to higher ranks compared to their counterparts.
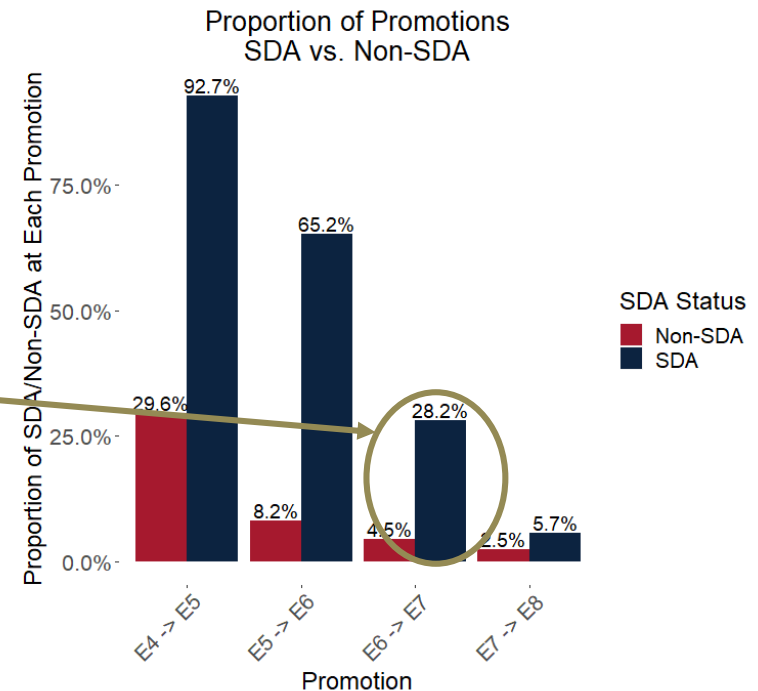
As an example, more than 28% of Marines who complete a SDA are promoted to Staff Sergeant as compared to less than 5% of their peers who never complete a SDA and are not promoted during this timeframe.

Proportion of Promotions SDA vs. Non-SDA

Positive Outcomes & SDAs: Highest Rank at Separation


Highest Rank Achieved
SDA vs. Non-SDA
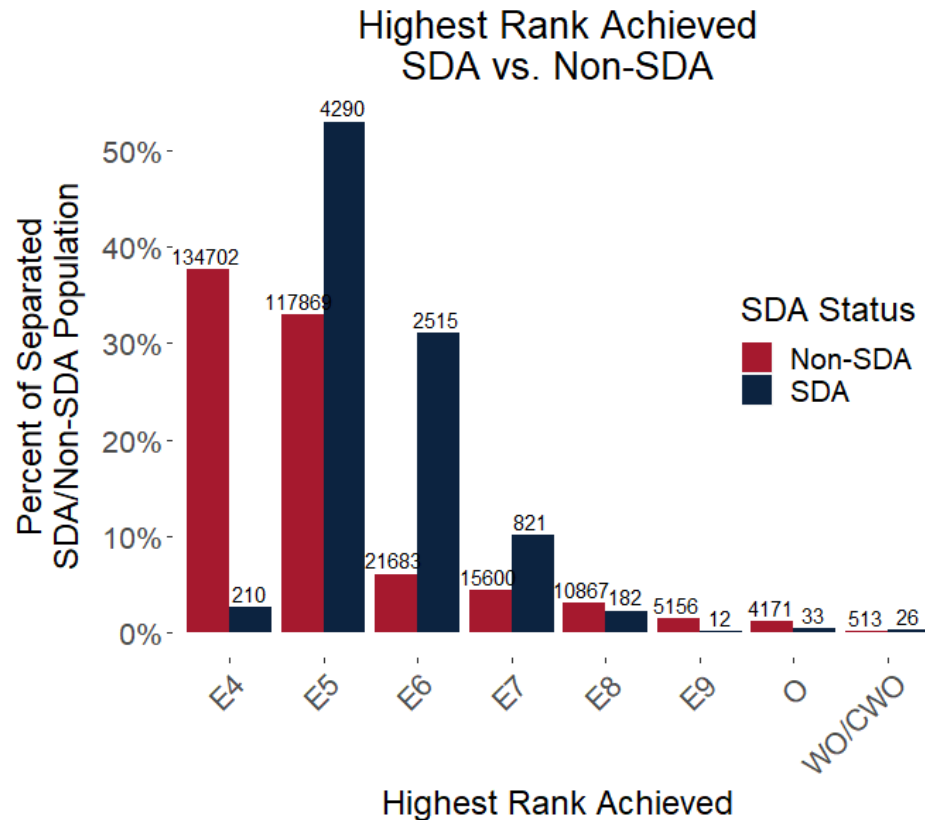
- Over 50% of Marines who serve on a SDA separate as an E5 in comparison to only 33% of the non-SDA control population.

- During this timeframe, only 36,307 (10%) of non-SDA Marines separate as E7 or above.

- 1,074 SDA Marines (13%) separate as E7 or above.

➢ Marriages end in divorce at least three times more frequently for Marines who are married prior to serving on a SDA when compared to their peers who never serve on a SDA.

Percent of SDAs Who Had a Divorce (Female vs. Male)
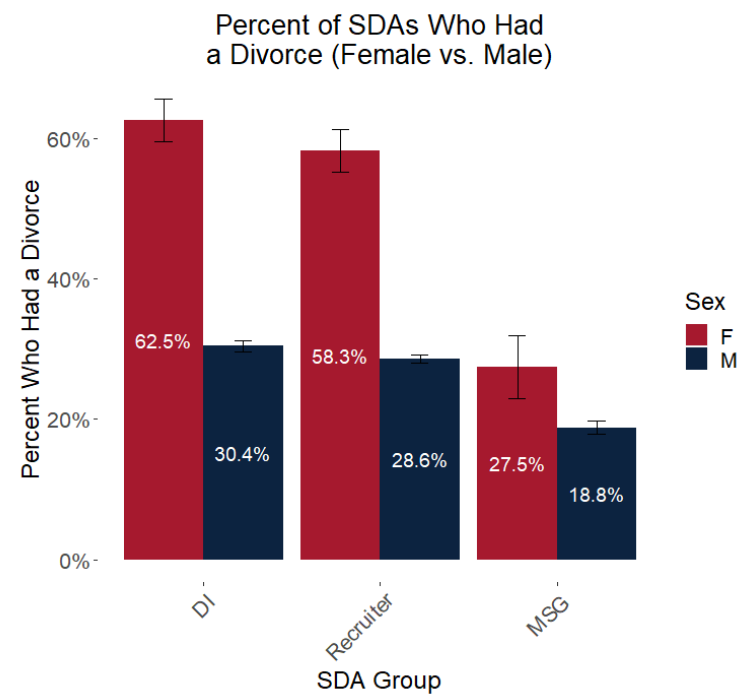
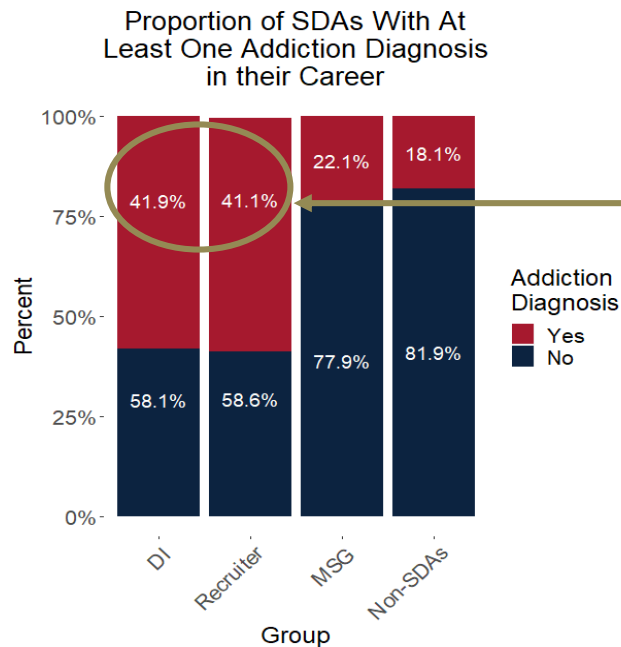| Group	% Divorced During Career	Number of Marines Who Ever Married	Number of Marines Who Divorced
DI	32.9%*	3,262	1,072
MSG	19.2%*	1,798	346
Recruiter	29.7%*	7,238	2,147
Non-SDAs	6.1%	63,831	3,880

* = $p (< 0.05) \chi^2$

➢ Across each SDA group, female Marines experience a higher rate of divorce compared to males.

➢ Female DIs and Recruiters are approximately twice as likely to get divorced compared to their male counterparts.

Adverse Outcomes & SDAs: Prevalence of Addiction Diagnoses

➤ Approximately 42% of DIs and Recruiters receive an addiction diagnosis at some point in their career. MSGs receive addiction diagnoses at a relatively lower rate (22%).

➤ Approximately 18% of non-SDAs receive an addiction diagnosis at any point in their career.

➤ Roughly 25% of DIs and Recruiters who had no history of addiction diagnoses before their SDA receive one during or after their assignment. MSGs receive addiction diagnoses at a much lower rate (~12%).
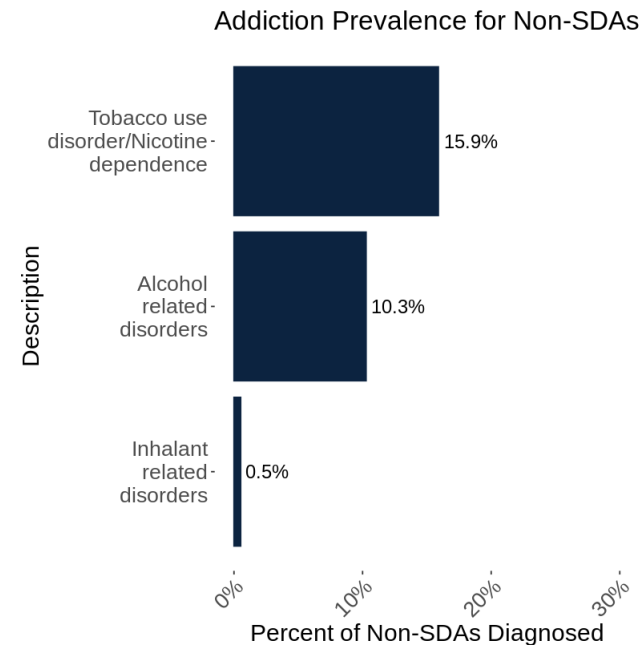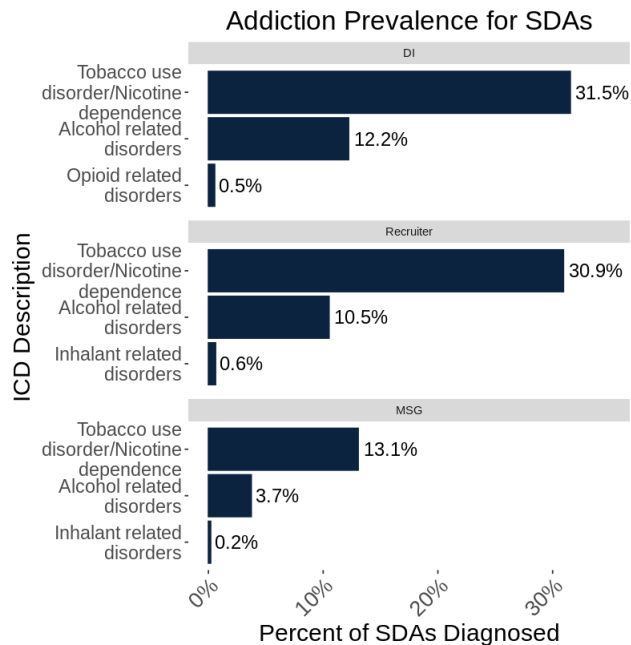

Proportion of SDAs With At Least One Addiction Diagnosis in their Career

Proportion of SDAs Who Had No History of Addiction Diagnoses Before SDA Assignment vs During/After Assignment
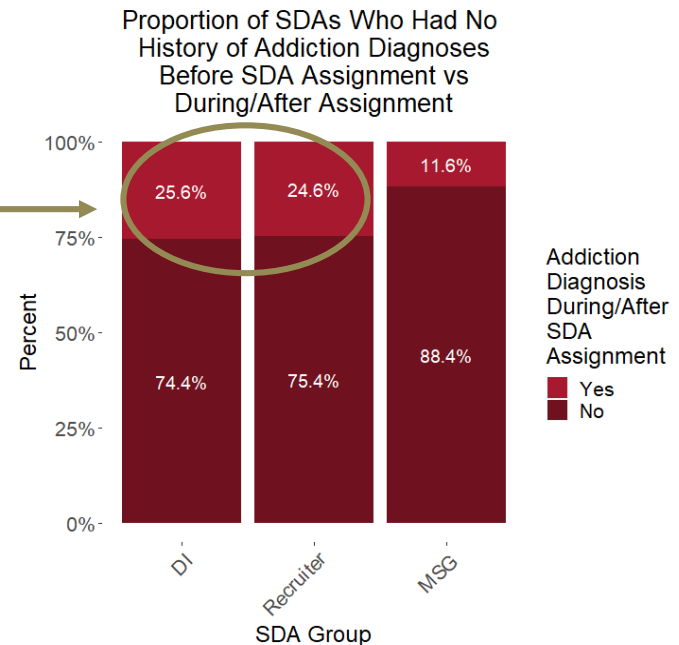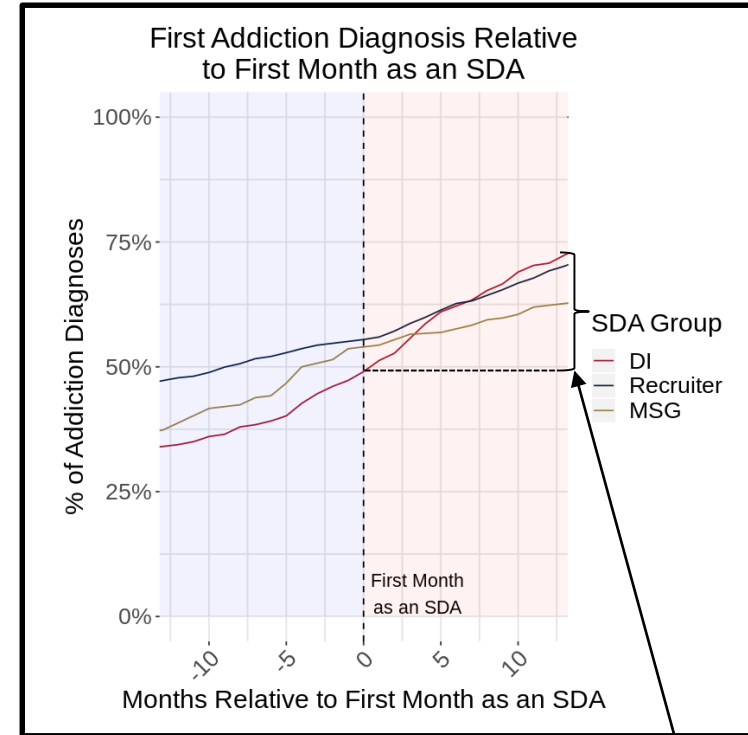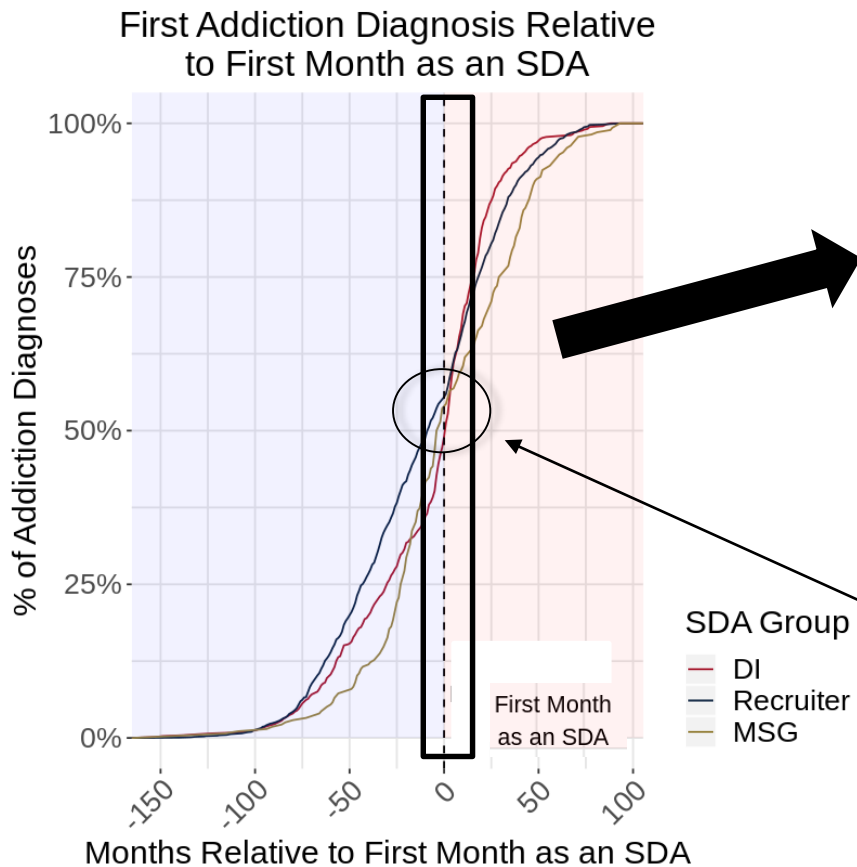
Adverse Outcomes & SDAs: Addiction Diagnosis Types

➢ Addiction-related diagnosis trends are similar across SDAs.

➢ Diagnoses for tobacco use are highest across all SDA populations. Alcohol abuse and dependency are less prevalent.

➢ The percent of the non-SDA population that receives a tobacco use diagnosis is much lower than that of the SDA population.

Addiction Prevalence for SDAs

DI
- Tobacco use disorder/Nicotine dependence: 31.5%
- Alcohol related disorders: 12.2%
- Opioid related disorders: 0.5%

Recruiter
- Tobacco use disorder/Nicotine dependence: 30.9%
- Alcohol related disorders: 10.5%
- Inhalant related disorders: 0.6%

MSG
- Tobacco use disorder/Nicotine dependence: 13.1%
- Alcohol related disorders: 3.7%
- Inhalant related disorders: 0.2%

ICD Description

Percent of SDAs Diagnosed

Addiction Prevalence for Non-SDAs

- Tobacco use disorder/Nicotine dependence: 15.9%
- Alcohol related disorders: 10.3%
- Inhalant related disorders: 0.5%

Description

Percent of Non-SDAs Diagnosed

Addiction-Related Behaviors: First Diagnosis Over Time

First Addiction Diagnosis Relative to First Month as an SDA

Approximately 50% of SDA Marines diagnosed with an addiction-related behavior receive their first diagnosis before starting their SDA.
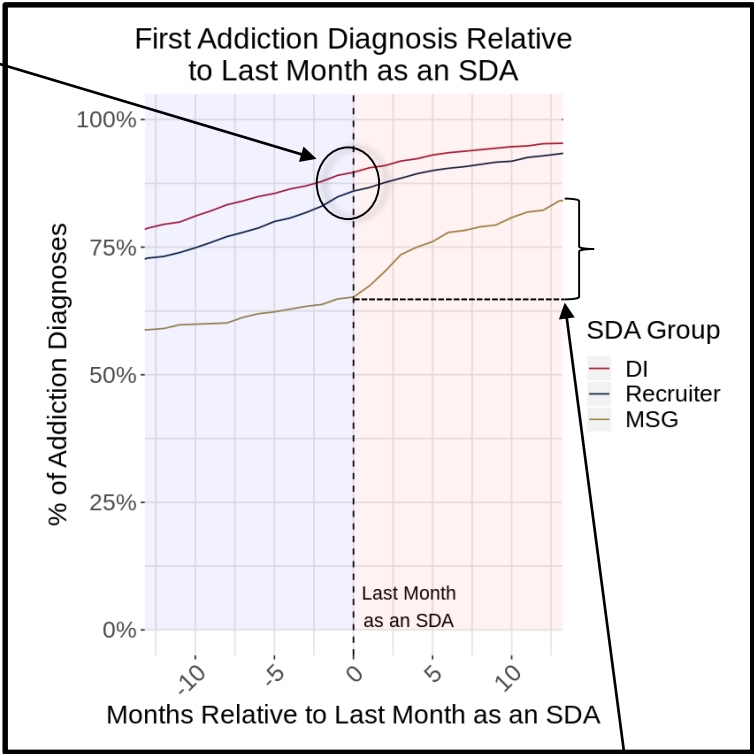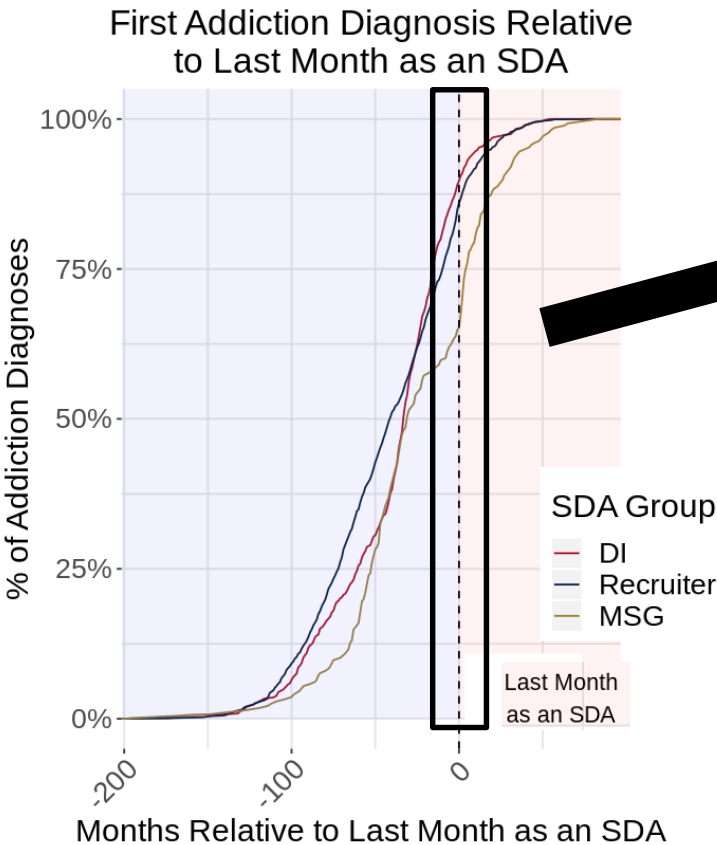
Of those DIs who receive an addiction diagnosis, 20% receive one within a year of starting their SDA.

Addiction-Related Behaviors: First Diagnosis Over Time (Cont.)

Almost 90% of DIs and Recruiters diagnosed with an addiction related behavior receive their first diagnosis before leaving their SDA.
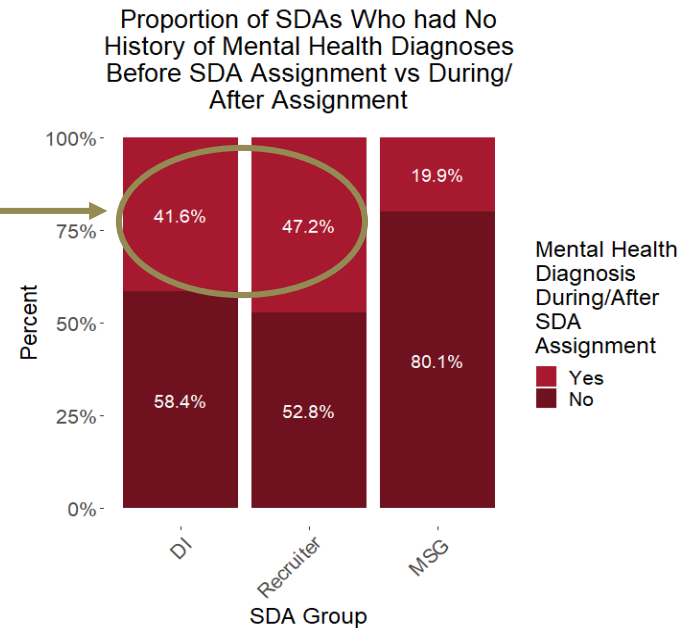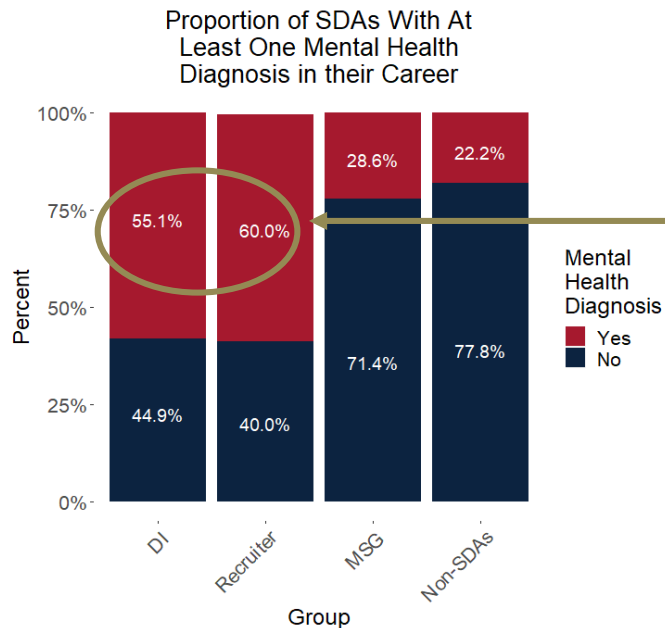
First Addiction Diagnosis Relative to Last Month as an SDA

Months Relative to Last Month as an SDA

SDA Group
— DI
— Recruiter
— MSG

Last Month as an SDA

First Addiction Diagnosis Relative to Last Month as an SDA

Months Relative to Last Month as an SDA

SDA Group
— DI
— Recruiter
— MSG

Last Month as an SDA

Of those MSGs who receive an addiction diagnosis, 17% receive one in the first 12 months post-SDA.

Adverse Outcomes & SDAs: Prevalence of Mental Health Diagnoses

- 55% of DIs and 60% of Recruiters receive a mental health diagnosis at some point in their career compared to approximately 22% of the non-SDA population.

- The analysis of EHRs shows that 41.6% of DIs and 47.2% of Recruiters *who had no history of mental health diagnoses* before their SDA receive one during their SDA or thereafter.
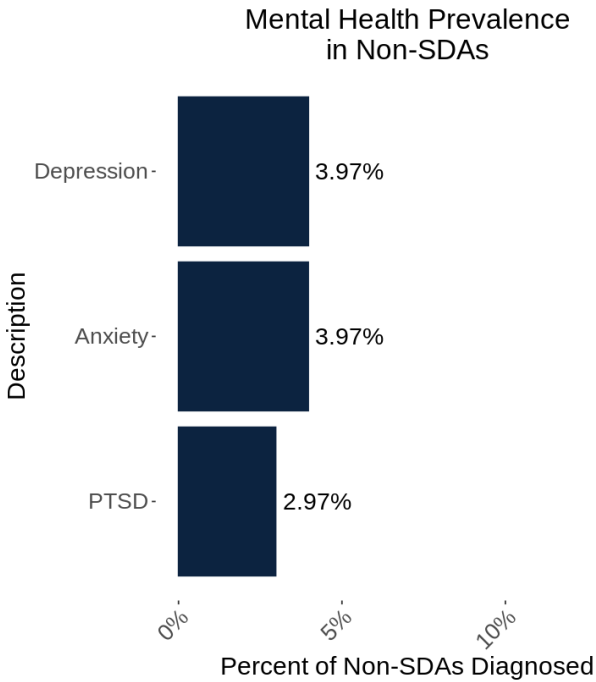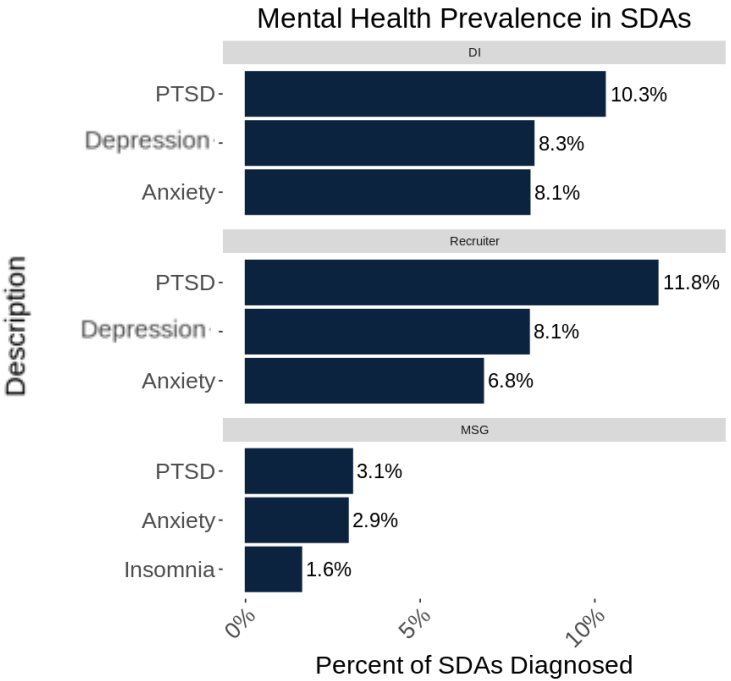

Proportion of SDAs With At Least One Mental Health Diagnosis in their Career

Proportion of SDAs Who had No History of Mental Health Diagnoses Before SDA Assignment vs During/After Assignment

➢ The top mental health diagnoses are similar across SDAs. Each group has high counts of PTSD, anxiety, and depression relative to other mental health diagnoses.

Mental Health Prevalence in SDAs

DI
- PTSD — 10.3%
- Depression — 8.3%
- Anxiety — 8.1%

Recruiter
- PTSD — 11.8%
- Depression — 8.1%
- Anxiety — 6.8%

MSG
- PTSD — 3.1%
- Anxiety — 2.9%
- Insomnia — 1.6%

Description

Percent of SDAs Diagnosed

Mental Health Prevalence in Non-SDAs

- Depression — 3.97%
- Anxiety — 3.97%
- PTSD — 2.97%

Description

Percent of Non-SDAs Diagnosed

➢ The non-SDA population's top mental health diagnoses are similar to DIs and Recruiters, but they are far less prevalent.

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Mental Health Related Behaviors: First Diagnosis Over Time

First Mental Health Diagnosis Relative to First Month as an SDA
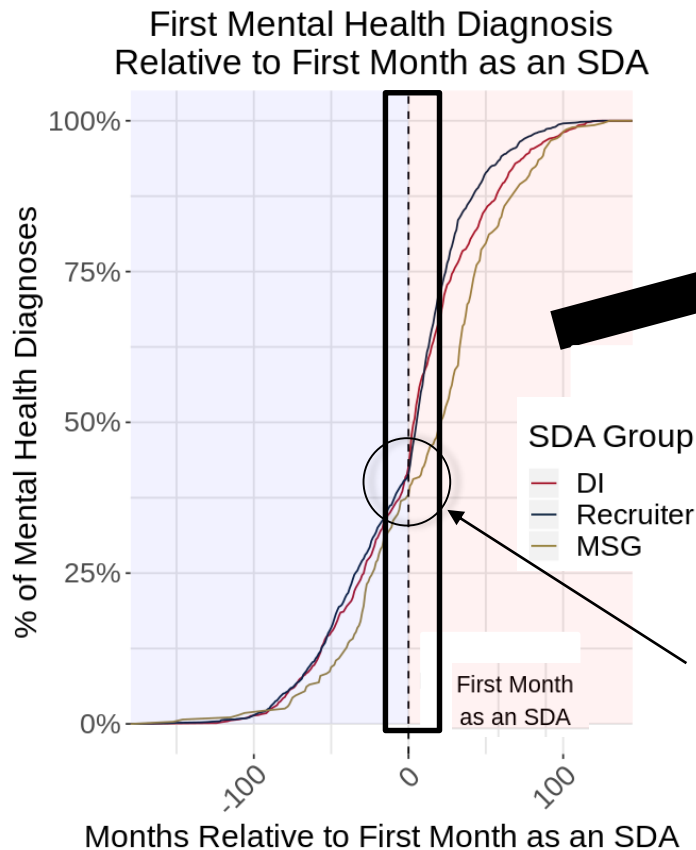
Approximately 40% of SDA Marines who are diagnosed with a mental health disorder receive their first diagnosis before starting their SDA.

First Mental Health Diagnosis Relative to First Month as an SDA
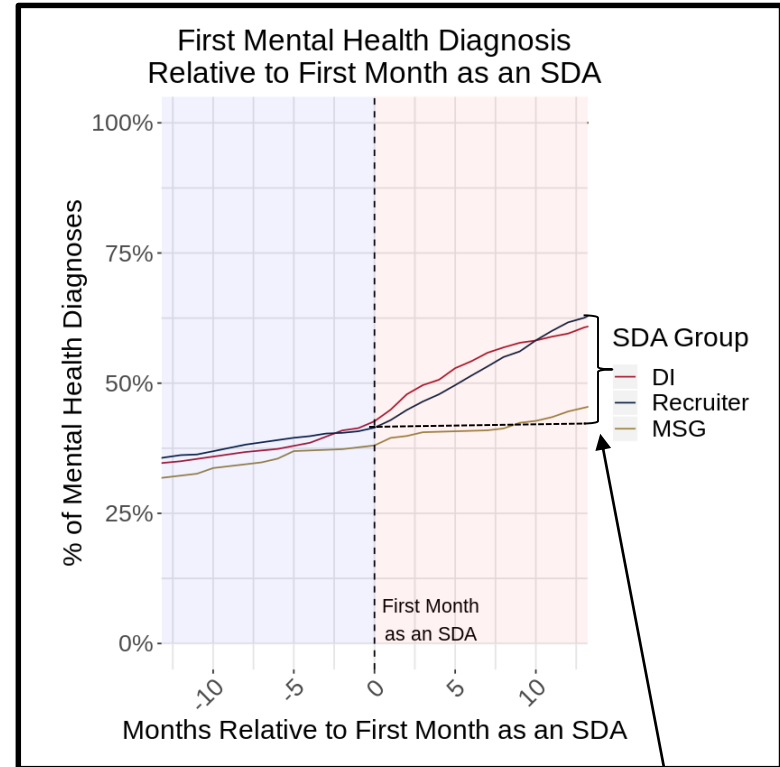
Of those DIs and Recruiters who receive a mental health disorder diagnosis, 17% and 20%, respectively, receive one within a year of starting their SDA.

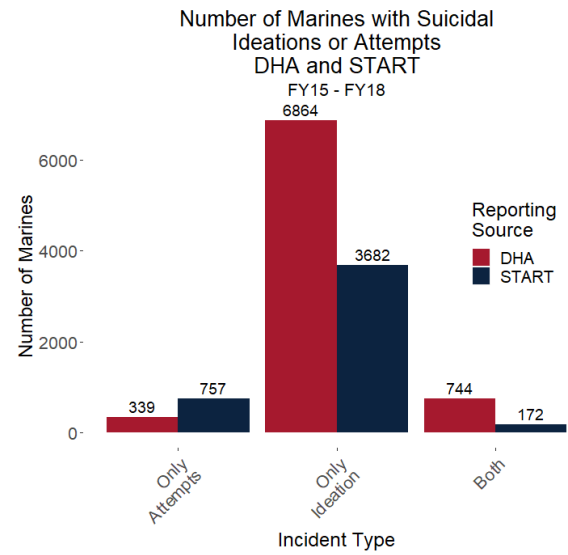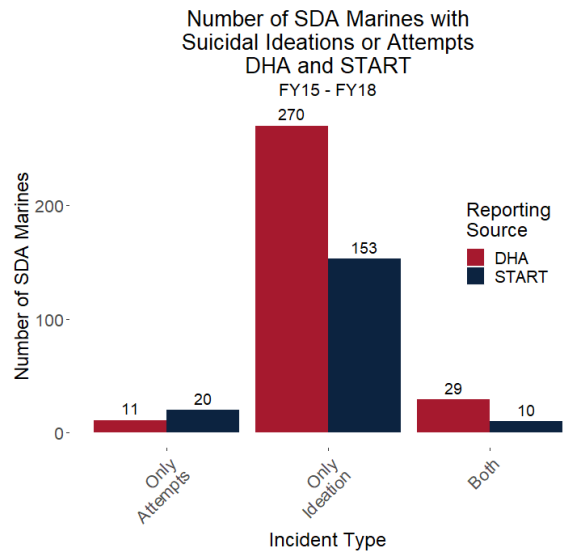# Mental Health Related Behaviors: First Diagnosis Over Time (Cont.)

First Mental Health Diagnosis Relative to Last Month as an SDA
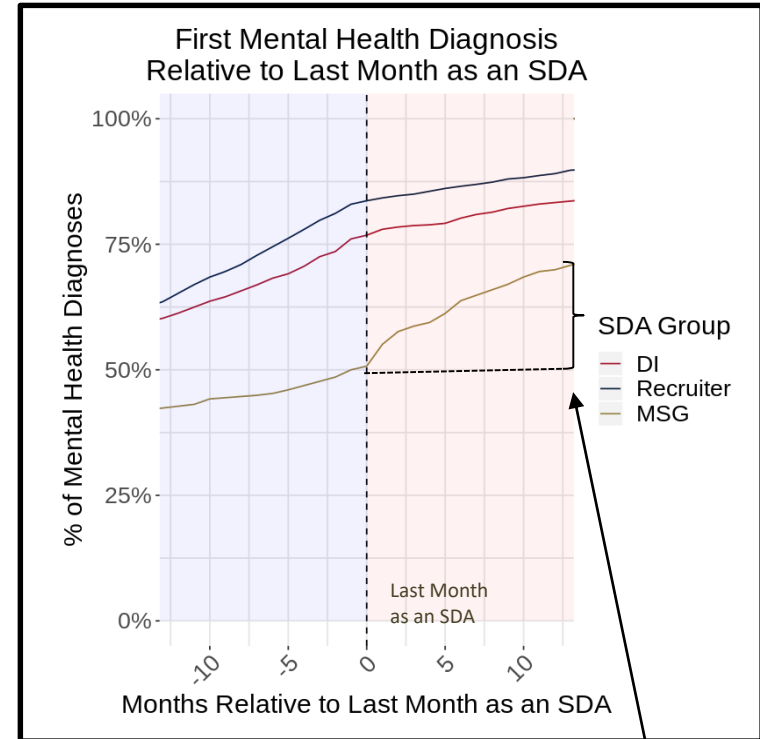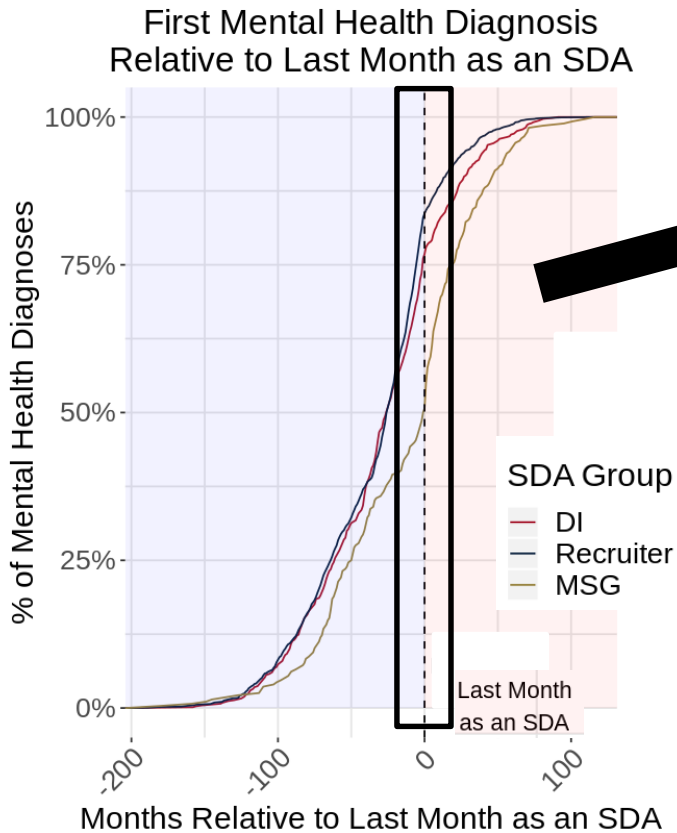
Of those MSGs who receive a mental health diagnosis, 19% receive one in the first 12 months post-SDA.

Suicide Related Diagnoses: Data & Reporting

➢ This study analyzes Marines from FY08-FY18, but the Suicide Analysis and Reporting Tool (START) was implemented for widespread use in FY15.

➢ From FY15- FY18, 183 unique SDA Marines exist in the START database compared to 310 unique SDA Marines that have a suicide attempt or ideation captured in their EHRs.

➢ From FY15-FY18, 4,611 unique Marines exist in the START database, compared to 7,947 unique Marines that have a suicide attempt or ideation captured in their EHRs.
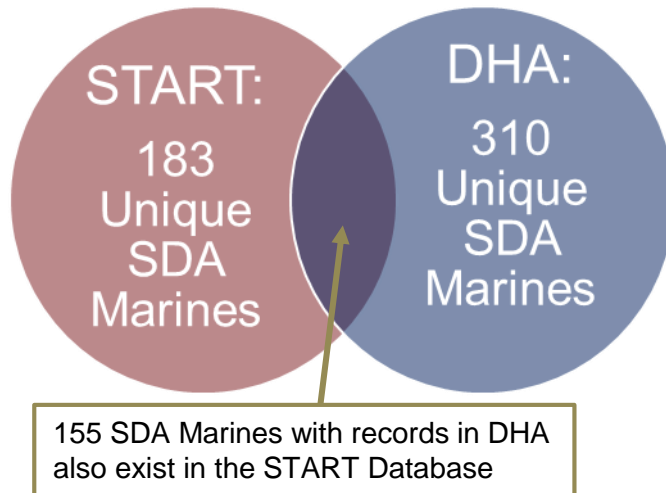

Number of SDA Marines with Suicidal Ideations or Attempts DHA and START FY15 - FY18

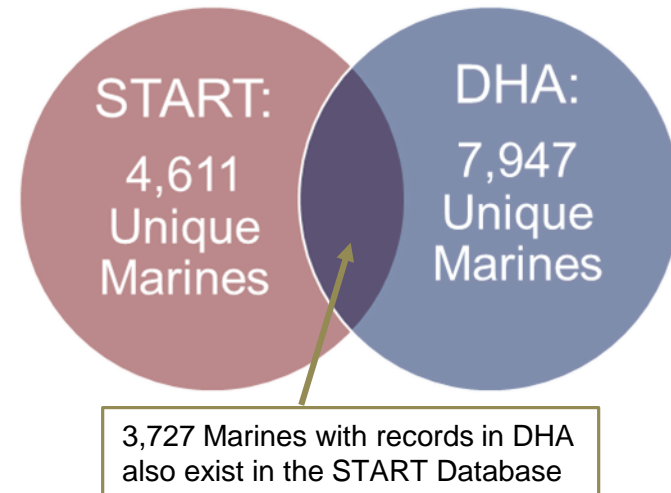Number of Marines with Suicidal Ideations or Attempts DHA and START FY15 - FY18

➢ Comparing the number of Marines whose commands are notified via the reporting chain and who are entered into the Corps' START to those who have diagnosed suicide events in their EHRs reveals that START only captures 50% of the SDA community with suicidal ideations/behaviors in their EHR.*

➢ Overall, only 46.9% of all Marines with a suicide ideation or attempt in their EHR are captured in START, leaving 4,220 Marines with a suicide ideation or attempt unaccounted for via the official reporting chain.

➢ When examining suicide attempts, deaths, and ideations, this study uses a combination of both DHA EHRs and records in START to ensure all instances are accounted for.

SDA Population FY15-FY18

START: 183 Unique SDA Marines

DHA: 310 Unique SDA Marines

155 SDA Marines with records in DHA also exist in the START Database

Total Population FY15-FY18

START: 4,611 Unique Marines

DHA: 7,947 Unique Marines

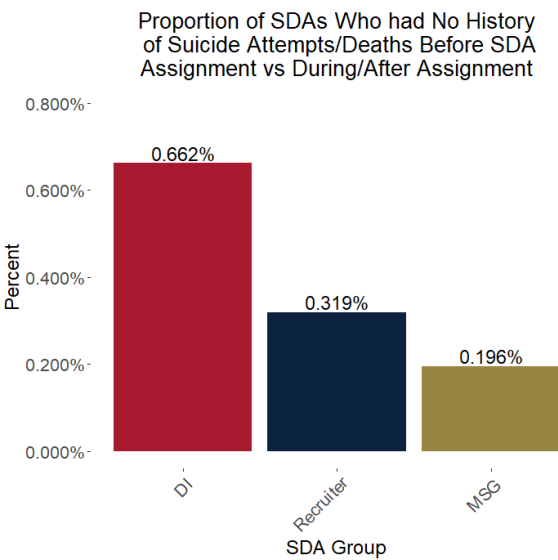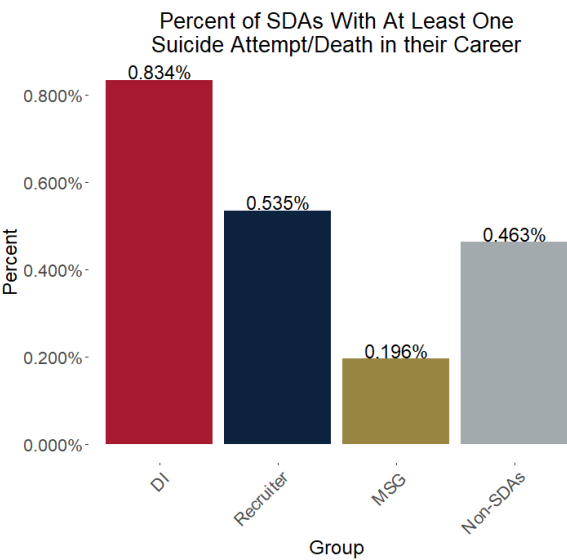3,727 Marines with records in DHA also exist in the START Database

*A primary driver of the discrepancy between START and DHA in reported ideations results from policy. MCO 3504.2A requires all suicide ideations to be reported via an OPREP-3 SIR as of August 2013. This analysis, however, covers 6 years of data prior to this MCO.

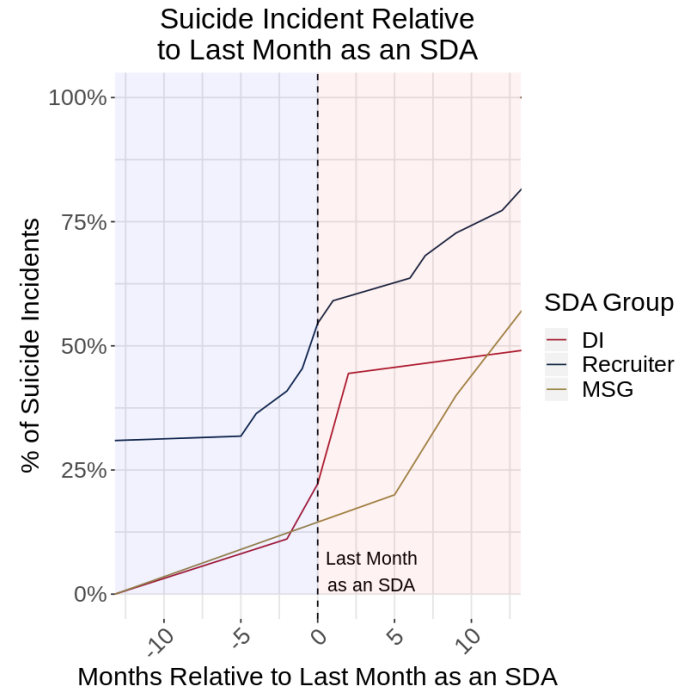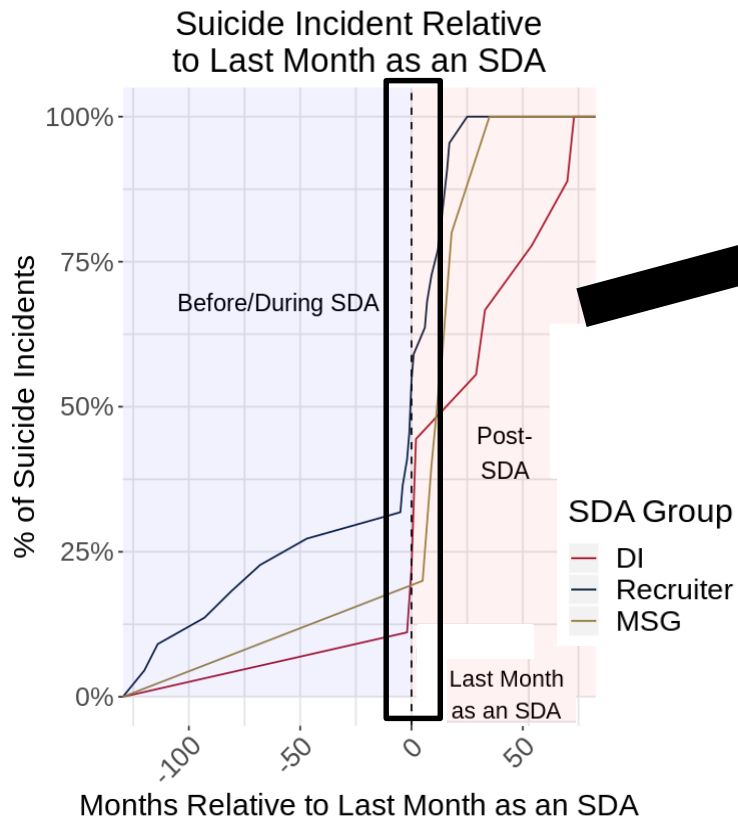# Suicide Related Diagnoses: Prevalence of Events

- Based on EHR and START data, 0.83% of DIs and 0.54% of Recruiters attempt suicide or die by suicide at some point during their careers.

- DIs have a suicide-related incident (attempt or death) rate nearly twice that of non-SDA Marines.

➤ 0.66% of DIs who had no history of suicide attempts before their SDA attempt or die by suicide during or after their SDA.

➤ This rate is lower for Recruiters and MSGs, at 0.32% and 0.20%, respectively.

Percent of SDAs With At Least One Suicide Attempt/Death in their Career

DI: 0.834%
Recruiter: 0.535%
MSG: 0.196%
Non-SDAs: 0.463%

Proportion of SDAs Who had No History of Suicide Attempts/Deaths Before SDA Assignment vs During/After Assignment

DI: 0.662%
Recruiter: 0.319%
MSG: 0.196%

Category	Number of Suicide Attempts/Deaths	Suicide (Attempts/Deaths) Rate per 100,000
Drill Instructor	29	833.81
Recruiter	42	535.30
MSG	11	195.59
Non-SDA	3,427	463.40

Suicide Related Behaviors: Incidents
(Attempt/Death) Over Time

Suicide Incident Relative to Last Month as an SDA

Suicide Incident Relative to Last Month as an SDA

- For DIs, suicide risk increases sharply in the last few months before leaving their SDA and in the first few months post-SDA.
- Suicide-related behaviors for Recruiters increase approximately five months prior to leaving a Recruiter billet. Approximately 50% of suicide incidents for Recruiters occur before completion of their SDA.
- MSGs experience a sharp rise in suicide incidents a few months after leaving their SDA.

Post-SDA Suicide Related Behaviors

Months Post-SDA vs. Months in SDA
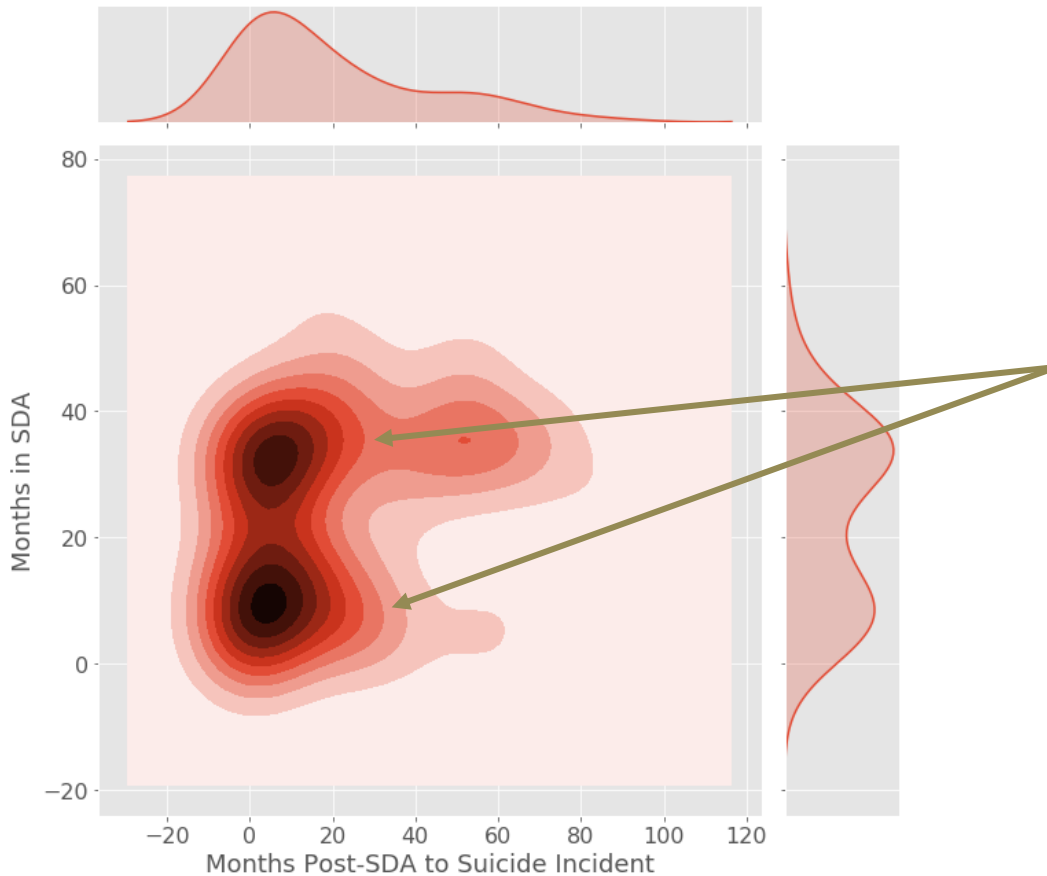
➢ Two distinct populations emerge concerning suicide-related behavior that occurs soon after leaving a SDA:

  o SDA Marines who stay the full length of their assignment

  o SDA Marines who leave their assignment early

Conclusions

➢ SDAs appear to be an essential prerequisite for achieving senior enlisted ranks.

➢ The stressors associated with SDAs may manifest themselves in Marines' lives in a variety of adverse outcomes, including higher rates of divorce, addiction diagnoses, mental health diagnoses, and suicide-related behaviors. These human costs should be incorporated into the overall costs associated with "making mission."

➢ Suicide-related behaviors vary across the different SDA populations. However, they generally exhibit a sharp increase in the probability of these events occurring at the SDA Marine's next duty station. This suggests that a more robust transition program could prove beneficial.

➢ MSGs attempt suicide or die by suicide at a significantly lower rate than other SDA Marines and non-SDA Marines alike, underscoring the effectiveness of the additional screening mechanisms this community employs. Exploring the feasibility of extending these screening mechanisms to the rest of the SDA community might be worth considering.

➢ Assuming resources dedicated to the DI and Recruiter populations are fixed, reducing the percentage of Marines who do not complete their first contract (i.e., NEAS) could potentially alleviate some of the burden placed on both of these populations. Additional research into modeling the likelihood of a recruit's propensity to NEAS could prove beneficial.